MPICH-G2

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Brief History

MPICH-G

- prototype MPICH over Nexus, Geisler
- move from prototype to implementation, Thiruvathukal
- passed MPICH test suite May 1998, Karonis
- MPICH-G born, released July 1998

MPICH-G2

- Toonen and Karonis start re-design, January 2000
- MPICH-G2 born, released September 2000

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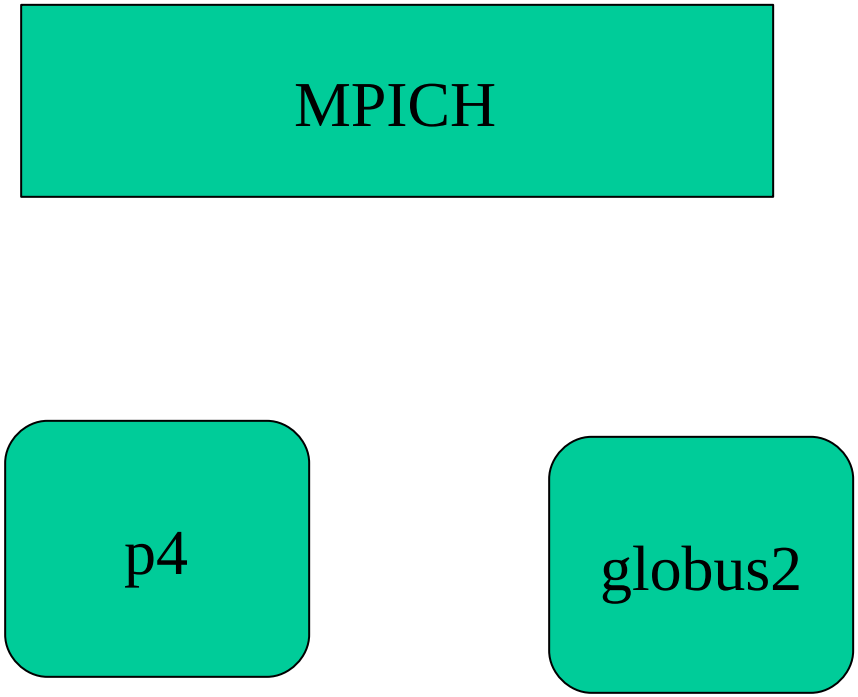
MPICH Architecture



Globus services in MPICH-G2

- Launching application
  - Resource Specification Language (RSL)
  - The Dynamically-Updated Request Online Coallocator (DUROC)
  - Globus Resource Allocation Manager (GRAM)
  - globusrun
  - Globus Security Infrastructure (GSI)
- Staging
  - Globus Access to Secondary Storage (GASS)
- TCP Messaging
  - Globus I/O
  - Data Conversion

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MPICH-G2's mpirun

- MPICH-G2 writes RSL for you
  - mpirun –np 2 a.out
- You write your own RSL
  - mpirun –globusrsl myapp.rsl
- Either way the RSL is passed to globusrun

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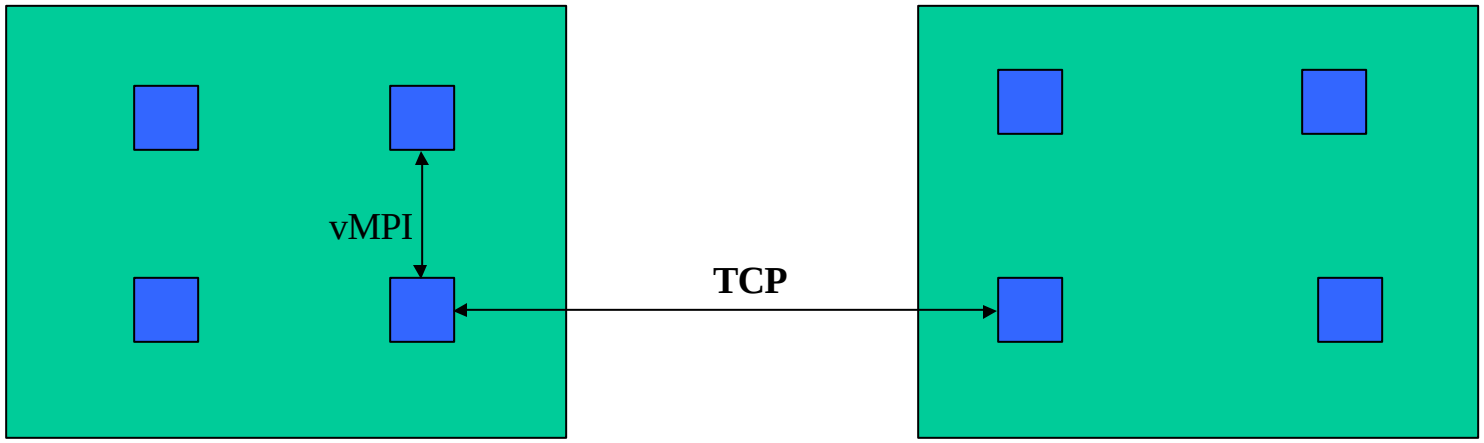
Multiprotocol Support



How does MPICH-G2 use vMPI?

- During compilation
  - rename (pre-compile) MPI symbols in MPICH source
  - rename (pre-compile) MPI symbols in application
- During Execution
  - maintain in tandem
    - > Communicators
    - > User-defined data types
  - implement MPI functions using collection of *semantically equivalent* vMPI functions

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Performance Evaluation

- SGI Origin 2000, ANL-CCST
  - 90 250 MHz CPUs
  - 512 MB/CPU
  - IRIX 6.5.9
  - SGI MPI MPT 1.4
- MPICH-G2 v1.2.1

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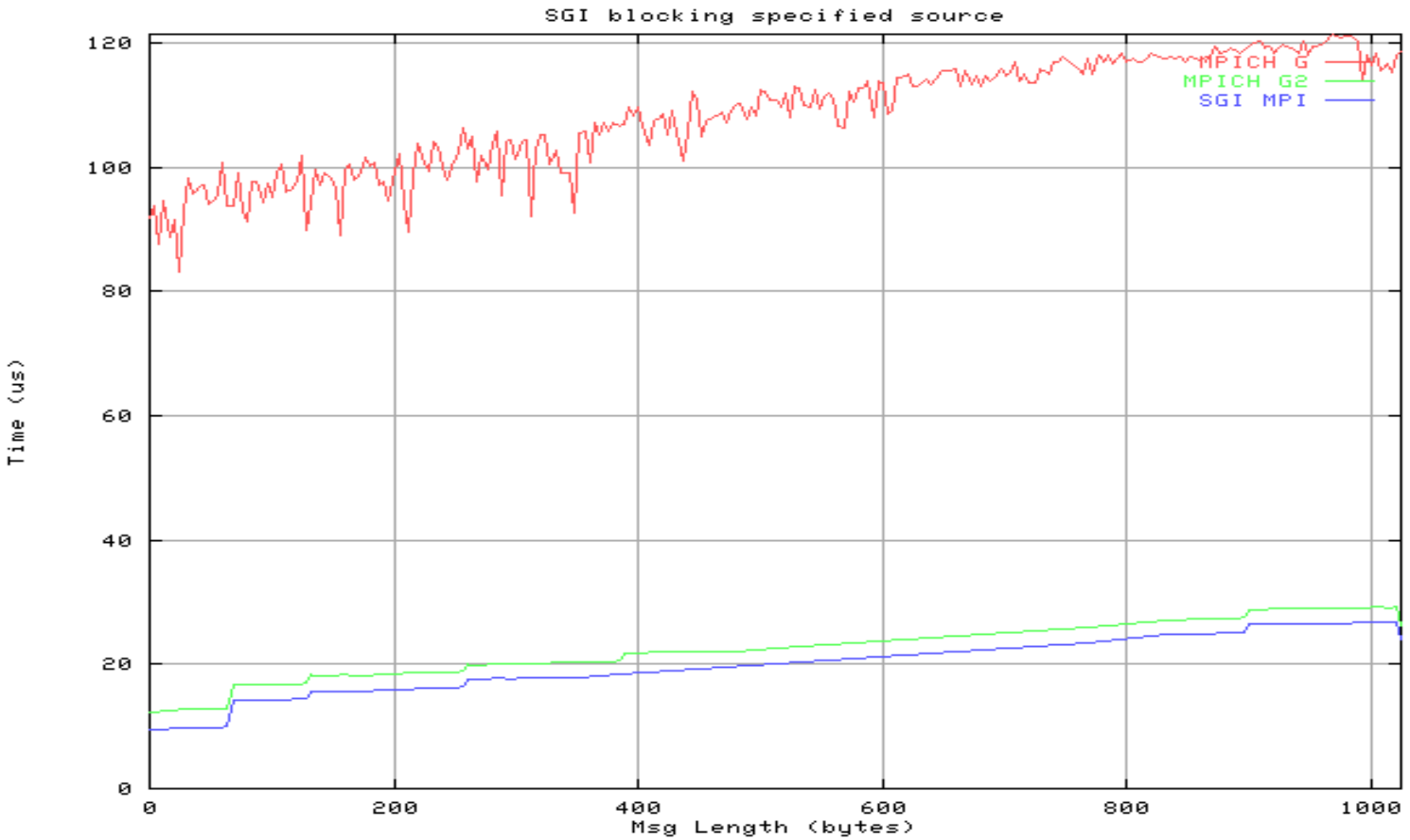
Specified source, 0-1KB



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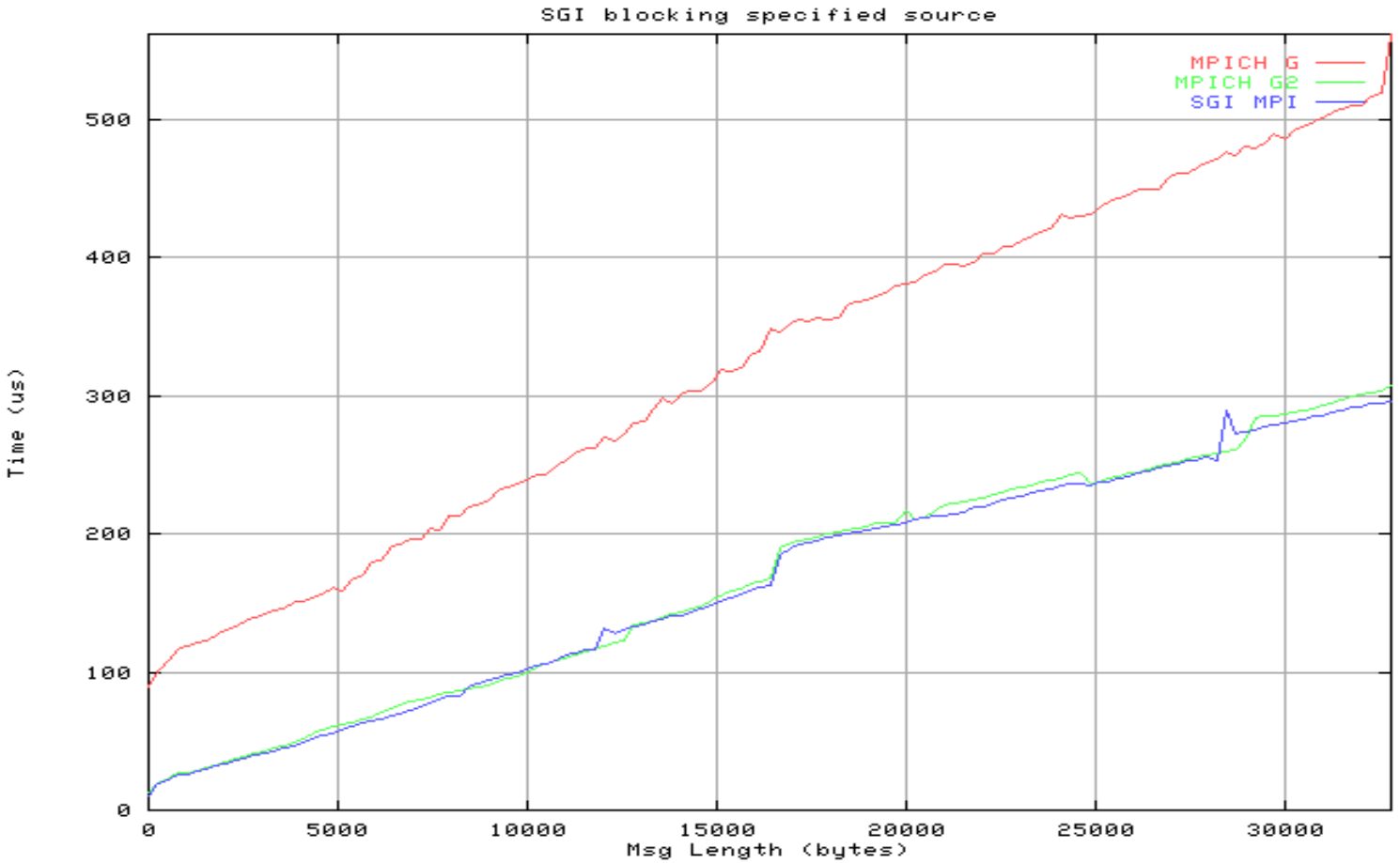

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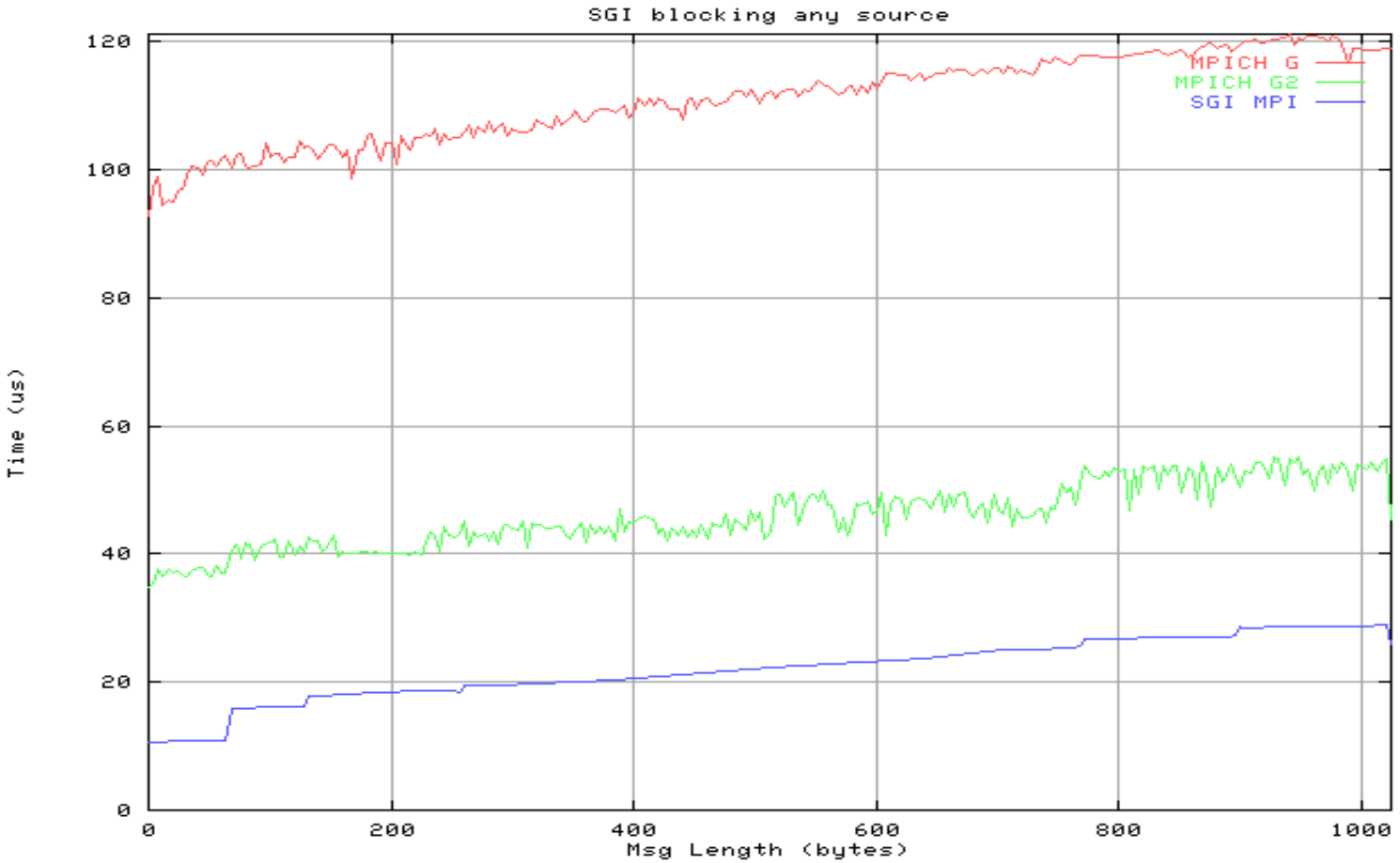
MPI_ANY_SOURCE, 0-1KB



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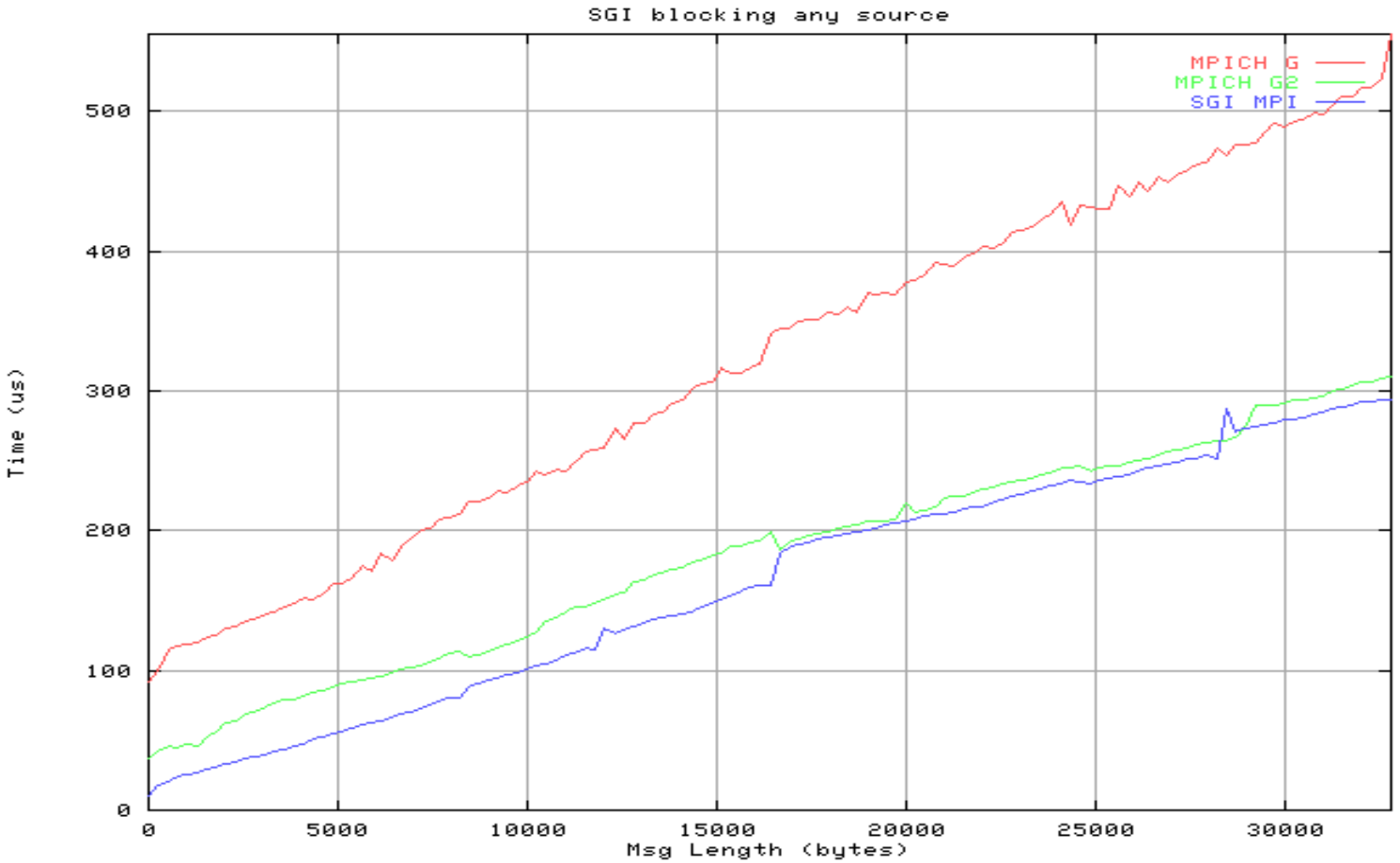
MPI_ANY_SOURCE, 0-32KB



What's New in MPICH-G2?

- client/server functionality from MPI 2.0
  - Server functions:
    - MPI_Open_port, MPI_Close_port and MPI_Comm_accept
  - Client function:
    - MPI_Comm_connect
- (some) Topology-aware collective operations
- Topology discovery mechanisms

For More MPICH-G2 Information

www.globus.org/mpi